Amendment to the claims

Please cancel claims 1-5, 10, and 12-15, and add new claims 16-35, all as appears in the following claim listing which replaces all prior versions and listings of the claims in this application.

1-15.(Canceled)

16.(New) A method of transmitting a wireless signal comprising:

identifying a signal space for wireless communication, the signal space including a range of frequencies;

creating a waveform for the signal space, the waveform organized into a plurality of sub-bands, each one of the plurality of sub-bands defined by one of a plurality of time-frequency tiles characterized by a bandwidth and an integration time;

adapting at least one of the bandwidth and the integration time of one of the plurality of the time-frequency tiles to provide a channel having a tile size selected to maintain a predetermined phase coherency across the time-frequency tile;

modulating a data signal onto the waveform using direct sequence spreading for each one of the plurality of sub-bands, thereby providing a transmit signal; and

transmitting the transmit signal into the signal space.

17.(New) The method of claim 16 wherein creating a waveform includes adding a preamble that includes an indication of the bandwidth and the integration time of at least one of the plurality of time-frequency tiles.

18.(New) The method of claim 17 wherein the preamble includes an indication of one or more of an M-ary alphabet size and a data rate for the at least one of the plurality of time-frequency tiles.

19.(New) The method of claim 18 wherein at least one of the m-ary alphabet size and the data rate vary over time.

20.(New) The method of claim 19 wherein the m-ary alphabet size and the data rate vary from burst to burst in a packetized data system.

21.(New) The method of claim 16 further comprising adapting the bandwidth and the integration time of all of the time-frequency tiles to provide a plurality of channels each having a coherent time-bandwidth product.

22.(New) The method of claim 16 wherein all of the time-frequency tiles have a common bandwidth and a common integration time.

23.(New) The method of claim 16 wherein adapting at least one of the bandwidth and the integration time includes changing at least one of the bandwidth and the integration time between a plurality of bursts of data transmission.

24.(New) The method of claim 16 wherein an actual phase coherency of a channel is determined according to one or more of experiment, radio frequency monitoring, and an estimate for an environment.

25.(New) The method of claim 16 wherein the signal space is used for ad hoc mobile network communications.

26.(New) The method of claim 16 wherein the data signal includes ad hoc mobile network data.

27.(New) The method of claim 16 wherein modulating the data signal onto the waveform includes forward error correction encoding the data signal and interleaving of the data signal, thereby providing signal diversity across time and frequency.

28.(New) The method of claim 16 further comprising excising one or more of a plurality of carriers of the transmit signal by using a zero amplitude signal.

29.(New) The method of claim 16 further comprising scrambling the data signal with a non-linear Transmission Security (TRANSEC) pseudo-noise overlay.

30.(New) The method of claim 16 wherein the transmit signal carries the data signal at a magnitude substantially within a noise floor for the signal space.

31.(New) A method of receiving a wireless signal comprising:

identifying a signal space for wireless communication, the signal space including a range of frequencies;

receiving a waveform in the signal space, the waveform including a preamble and the waveform organized into a plurality of sub-bands, each one of the plurality of sub-bands defined by one of a plurality of time-frequency tiles characterized by a bandwidth and an integration time;

determining the bandwidth and the integration time of each of the plurality of sub-bands based upon the preamble; and

demodulating a data signal from the waveform using direct sequence spreading for each one of the plurality of sub-bands.

32.(New) The method of claim 31 wherein demodulating the data signal includes using the preamble to determine at least one of an m-ary alphabet size and a data rate used to encode the data signal.

33.(New) The method of claim 31 wherein demodulating the data signal includes forward error correction decoding the data signal.

34.(New) The method of claim 33 further comprising measuring a quality of at least one of the plurality of sub-bands and when quality is insufficient, erasing at least one of the plurality of sub-bands before forward error correction decoding the data signal in the at least one of the plurality of sub-bands.

35.(New) A device comprising:

a data source providing a data signal;

a transmitter adapted to create a waveform for a signal space including a range of frequencies, the waveform organized into a plurality of sub-bands, each one of the plurality of sub-bands defined by one of a plurality of time-frequency tiles characterized by a bandwidth and an integration time, the waveform including a preamble that includes the bandwidth and the integration time of the plurality of time-frequency tiles, the transmitter further adapted to adjust the bandwidth and the length of time of one of the time-frequency tiles to provide a channel having a tile size selected to maintain a predetermined phase coherency across the time-frequency tile;

a modulator adapted to modulate the data signal onto the waveform using direct sequence spreading for each one of the plurality sub-bands, thereby provide a transmit signal; and

a transmitter that transmits signal into the signal space.